



# CCPaSEC Quality Control Assurance Project Plan

2016

kj Feb rev C 2016



# The quality of our data is important

- We've seen an awakening of interest in our activity.
- People are asking for what sites we visit, how often and wish to see and use our data.
- PSU and LHU have come to depend on our volunteers to perform sampling.
- We've been provided new equipment, requiring new procedures and were asked to collect special samples for methane analysis.

# Quality Assurance



A successful quality program instills confidence in those who record and those who would use our data.

## Purpose:

For our data to be meaningful to others it should be both accurate and verifiable. The Quality program's purpose is to verify the procedures we use and to quantify the quality of our data.

A quality program assures that our data collection methods are consistent with good practice and our equipment is in good working order.

# Quality Assurance Plan

## to promote:



**Understanding** - review the various tests methods with our team members and share a common understanding of the protocol and our equipment capabilities.

**Competence** – Help our volunteers assure teams follow the monitoring guidelines to achieve accurate and consistent results.

**Documentation** – Help our volunteers assure data records are accurate and are available to the public.

**Team Safety** – assure our volunteers are properly equipped with First Aid kits, cell phones and are prepared to respond in the event of an accident.

# Why have a QAP?



*It's required by all of the PaSEC groups.*

1. All PaSECs achieve the same data quality objectives, even with differing local & group goals.
2. Data is comparable across the teams.
3. Data is of a known quality.

# Our CCPaSEC Quality Goals



**Our CCPaSEC plan proposed in 2014 is based on the original PaDEP EASI requirements:**

## **Goal 1:**

Quality Control will perform duplicate testing with the field teams of all test parameters at least once a year.

QC will Determine the mean quality value of our teams data collection in terms of Relative Percent Difference (RPD) compared to the previously established EASI standard (< 20%).

## **Goal 2:**

Quality control will review the condition of our test equipment at each year. and perform a comparative evaluation of accuracy using certified standards.  
Percent Recovery (90 – 110%)

## **Goal 3:**

Team safety. Review field teams adherence to best practice and protocol.

# Goal 1: Data Collection



RPD is an indicator of the quality of our data

Our test equipment has limited accuracy. The previous EASI recommended standard is that for data collection should be within 20% Relative Percent Difference (RPD).

The RPD includes Team performance and the equipment capability (Goal 2).

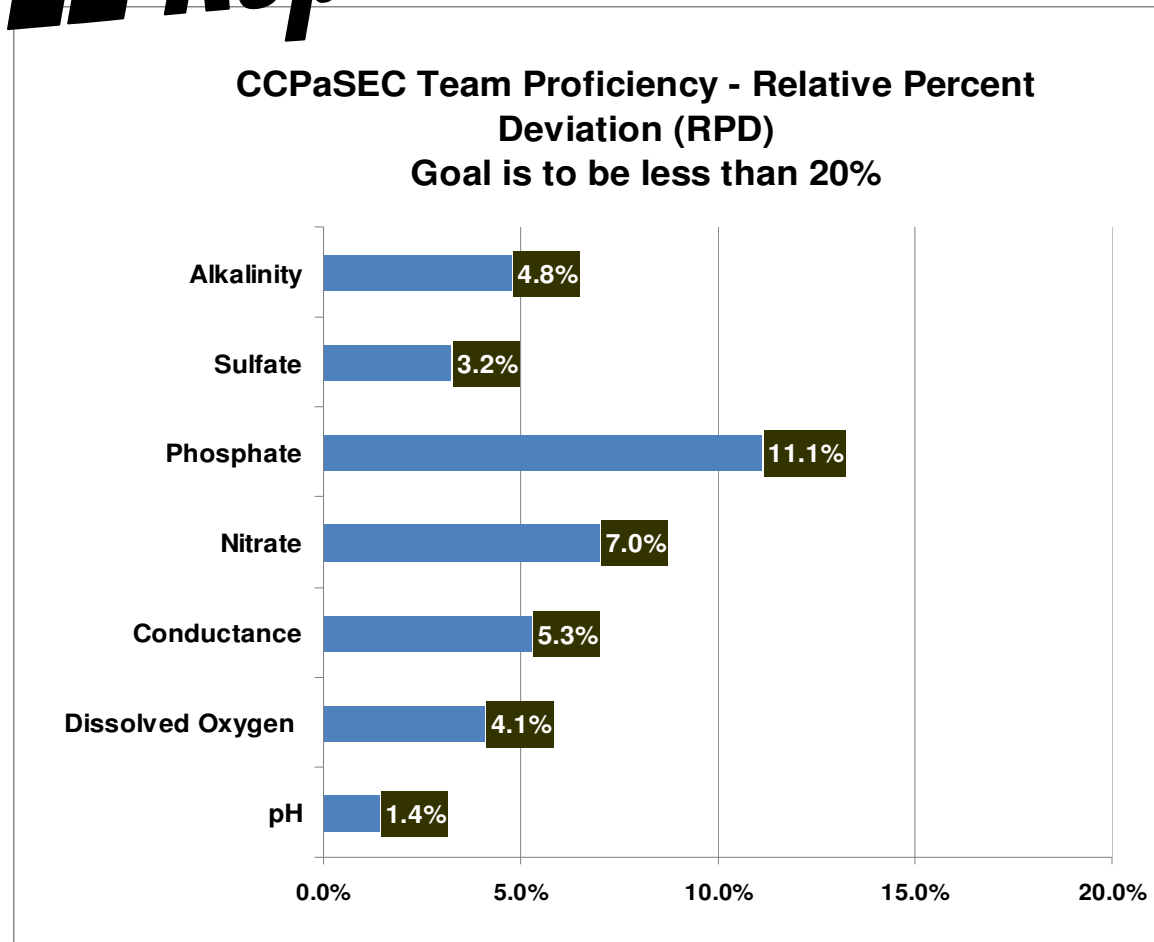
RPD is determined from duplicate measurements and reported in terms of the mean values for our team's results.

$$\text{RPD} = \frac{\text{ABS } (X_s - X_d)}{(X_s + X_d)/2}$$

**X<sub>s</sub>** = Team Measurement, **X<sub>d</sub>** = Duplicate Measurement

# Example RPD

## *EXAMPLE Report*





# Goal 2: Equipment Capability



All Teams are required to calibrate their instruments prior to monitoring their sites.

Once a year Quality Control will perform a calibration of all CCPaSEC instruments using a certified standard to determine Percent Recovery.

The Quality objective is for a Percent Recovery value between 90 and 110 percent.

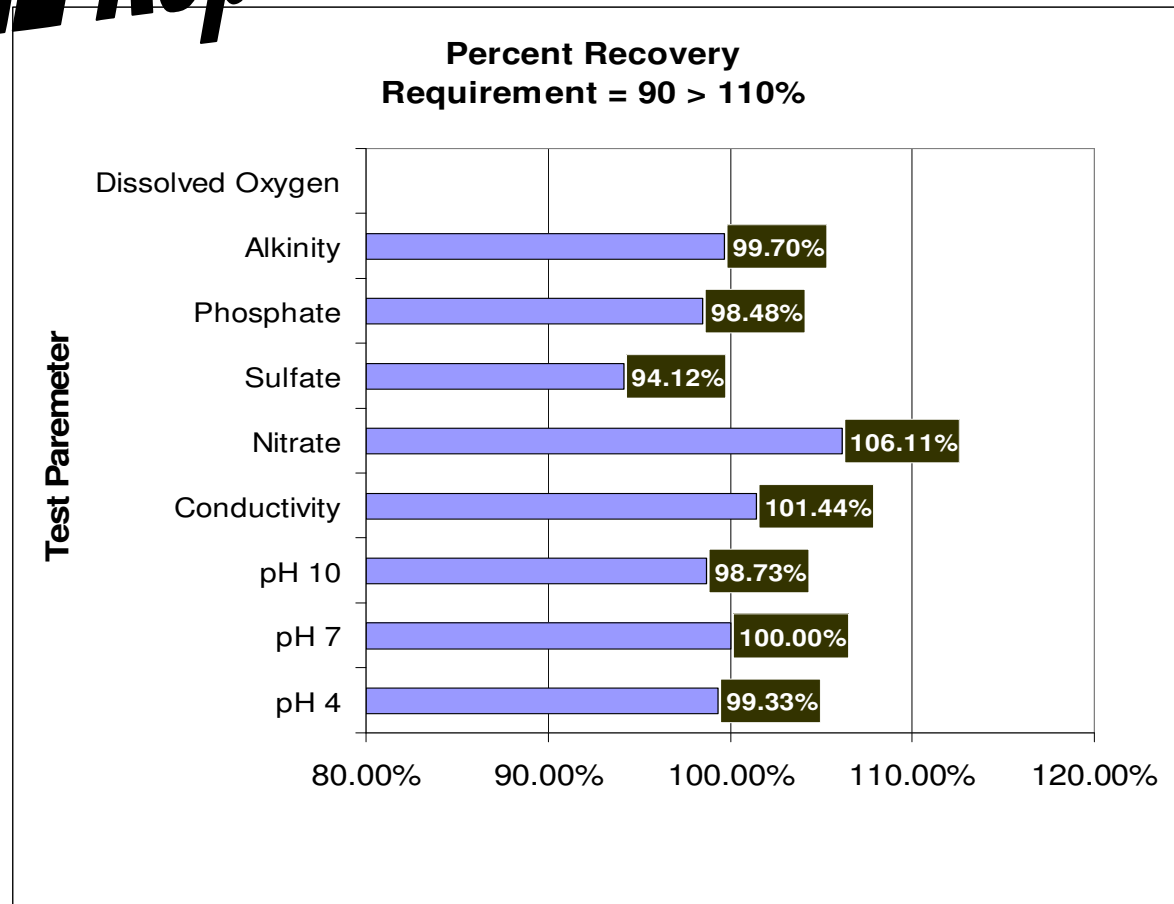
$$\text{Percent Recovery} = \frac{\text{Mean}}{\text{True Value}^*} \times 100$$

\* the value of the known standard

Any device failing or near failing these limits will be replaced or repaired

# Percent Recovery

## *EXAMPLE Report*



## Goal 3: Key Team Safety guidelines



1. **Take a buddy along!** Teams of three or more are preferred. Always monitor with at least one partner. (Three partners if you are measuring flow or performing macros - one volunteer should remain on dry land).
2. **Have a team first aid kit and Cell phone.**
3. **Always let someone else know where you are,** when you intend to return, and what to do if you do not return on time. Know your location in the event you need to call for help.
4. More detailed safety recommendations are posted on our WEB site

# Goal 4: Continuous Improvement



The Quality Team will visit each field team at least once a year to verify procedures used and to share recommendations between teams.

1. Consult with our local Universities for recommendations of data collection and procedures.
2. Recommend if other chemical parameters should be included in our observations and how to collect them.
3. Consult our Field teams for improvement in procedures and share suggestions.
4. Evaluate new equipment and monitoring procedures.
5. Consult with Nature Abounds and the other PaSEC teams to share and improve our stewardship.

# Reports:



The CCPaSEC WEB site shall publish a yearly Quality Control summary of results and recommendations.

- Physical Equipment Check results
- Percent Recovery (all CCPaSEC data categories)
- CCPaSEC mean RPD\* (duplicate observations)
- Safety Report
- Recommendations

# What we can do:



1. Follow the procedures in our field manual.
2. Verify that the chemical reagents we use are within shelf life each time you use them.
3. Assure that our test equipment is clean.
4. Perform periodic calibration of your test equipment using supplied standard solutions.
5. Verify that your data has been accurately transcribed into our database.
6. Always Include a note if you had to depart from the normal process or observed an anomaly that may affect the results.
7. Report any equipment problems to our supply chairman.

We encourage suggestions from the field teams and individuals to improve our quality plan.